Fact Sheet

Falcon Hypersonic Technology Vehicle 2 (HTV-2)

National Security Challenge

The U.S. military seeks the capability to respond, with little or no advanced warning, to threats to our national security anywhere around the globe.

Program Objective

DARPA's Falcon HTV-2 program objective is to create new technological options that enable capabilities that address urgent threats to our national security. The program is developing and testing an unmanned, rocket-launched, maneuverable, hypersonic air vehicle that glides through the Earth's atmosphere, at incredibly fast speeds – Mach 20 and above.

Program Goal

The specific goal of the program is to conduct flight tests that demonstrate and validate technologies crucial to flight at hypersonic speeds. The first flight test, scheduled for April 20, 2010, is a rocket launch of a new gliding air vehicle known as HTV-2. Designed for DARPA by Lockheed Martin, the vehicle will be launched from Vandenberg Air Force Base, California on an Orbital Sciences' *Minotaur IV Lite* rocket. HTV-2 will be accelerated into the Earth's upper atmosphere, separate from the rocket, descend into the atmosphere, and glide across the Pacific Ocean at more than 13,000 miles per hour. HTV-2 will reach its destination in less than 30 minutes and impact in the ocean north of the Reagan Test Site in the Kwajalein Atoll, a total distance from lift-off to impact of about 4,100 nautical miles.

The key technical challenges and achievements of the HTV-2 program are the design of an innovative high lift-to-drag aerodynamic shape, advanced lightweight but tough thermal protection structures, materials and fabrication technologies, autonomous hypersonic navigation guidance and control systems, and an autonomous flight safety system.

Critical Enabling Technologies

Critical enabling technologies include elements necessary for hypersonic aerothermodynamics, high-temperature materials and structures, the navigation guidance and control system, and thermal protection techniques. The program demands a multidisciplinary approach and relies on expertise in such areas as aerothermodynamics, materials science, hypersonic navigation, guidance and control systems, endo- and exo-atmospheric flight dynamics, telemetry, range safety analysis, and space launch.

Partnership with the Services

DARPA is working in cooperation with many Services and Agencies, including the U.S. Air Force, Missile Defense Agency, U.S. Navy and Army. The extensive flight data collected will increase the understanding of long-duration hypersonic vehicle flight and enable future advances in this technology area.

Program Milestones: HTV-2 is in its third and final phase.

Performer: Lockheed Martin Corporation

Program Management and Information:

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